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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,708	02/21/2002	Hisashi Adachi	MTS-3310US	1254
23122	7590	12/28/2004	EXAMINER	
RATNERPRESTIA			BELLO, AGUSTIN	
P O BOX 980			ART UNIT	
VALLEY FORGE, PA 19482-0980			PAPER NUMBER	
			2633	
DATE MAILED: 12/28/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/081,708	ADACHI ET AL.	
	Examiner	Art Unit	
	Agustin Bello	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☒ Claim(s) 7-12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/28/02</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bultman (U.S. Patent No. 6,647,250).

Regarding claim 1, Bultman teaches a frequency modulator (reference numeral 1378 in Figure 13W) that performs frequency modulation of a carrier wave with frequency modulation data and outputs the frequency-modulated carrier wave; a second modulator (reference numeral 1380 in Figure 13W) which performs modulation of amplitude modulation data; and an amplitude modulator (reference numeral 1380 in Figure 13W) that performs amplitude modulation of the frequency-modulated carrier wave with an output signal of the second modulator and outputs the amplitude-modulated carrier wave. Bultman differs from the claimed invention in that Bultman fails to specifically teach that the second modulator comprises a sigma-delta modulator. However, sigma-delta modulators are well known in the art. One skilled in the art would have been motivated to employ a sigma-delta modulator in the design of Bultman in order to easily convert an analog input signal to a digital output signal. Furthermore, Bultman teaches that the modulators of the system can be of any type (column 44 lines 18-30), thereby suggesting that the second modulator could be a sigma-delta modulator. Therefore, it

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would have been obvious to one skilled in the art at the time the invention was made to employ a sigma-delta modulator in the design of Bultman.

Regarding claim 2, Bultman teaches that the amplitude modulation data has multiple digital values (e.g. "1" and "0" inherent in the system), and wherein the sigma-delta modulator modulates the amplitude modulation data amplitude data having binary digital values (inherent in the analog to digital conversion capability of the sigma-delta modulator).

Regarding claim 3, Bultman differs from the claimed invention in that Bultman fails to specifically teach a sigma-delta modulator that is at least a second or higher order sigma-delta modulator. However, such modulators are well known in the art and would have been obvious selections for the sigma-delta modulator discussed above.

Regarding claim 4, Bultman differs from the claimed invention in that Bultman fails to specifically teach a bandpass filter. However, bandpass filters are very well known in the art and would have been obvious to one skilled in the art. One skilled in the art would have been motivated to employ a bandpass filter in order to eliminate unwanted signals.

Regarding claim 5, Bultman differs from the claimed invention in that Bultman fails to specifically teach that the amplitude modulator has a power amplifier and performs amplitude modulation by controlling a power supply of the power amplifier on the basis of an output signal of the sigma-delta modulator. However, Bultman teaches that the modulators of the system could have been of any type and surely would have included the type claimed. Furthermore, using a power amplifier to perform amplitude modulation is well known in the art. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ a power amplifier as the amplitude modulator of Bultman.

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Regarding claim 6, Bultman fails to specifically teach class B or class C amplifiers. However, such amplifiers are well known in the art and readily available. One skilled in the art would have been motivated to employ these types of amplifiers in order to meet design requirements or cost requirements.

Allowable Subject Matter

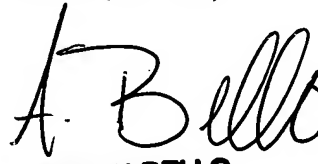
3. Claims 7-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


AGUSTIN BELLO
PATENT EXAMINER